



National Transportation Safety Board Aviation Accident Final Report

Location:	LOS ANGELES, CA	Accident Number:	LAX95LA180
Date & Time:	05/07/1995, 1251 PDT	Registration:	N41BF
Aircraft:	DAVENPORT LONG-EZ	Aircraft Damage:	Destroyed
Defining Event:		Injuries:	1 Serious
Flight Conducted Under:	Part 91: General Aviation - Personal		

Analysis

AFTER BEING CLEARED FOR A FLYBY, THE AIRCRAFT WAS OBSERVED OVER THE RUNWAY AT 20 TO 30 FEET AGL. A FEW SECONDS LATER, THE PILOT DECLARED AN ENGINE FAILURE. THE AIRCRAFT MADE A LEFT TURN SOUTHWEST OF THE AIRPORT STRIKING OVERHEAD ELECTRICAL LINES, SEVERING THE RIGHT WING, ROLLING RIGHT, AND CRASHING INTO A RESIDENCE. A POSTACCIDENT INSPECTION OF THE AIRCRAFT REVEALED THAT THE ELECTRIC FUEL BOOST PUMP AND THE MECHANICAL ENGINE- DRIVEN FUEL PUMP HAD BOTH BEEN REMOVED. THE DESIGNER HAD PREVIOUSLY TESTED A GRAVITY FUEL SYSTEM AND FOUND IT UNACCEPTABLE, SINCE THE HEIGHT OF THE FUEL TANKS ABOVE THE CARBURETOR DID NOT PROVIDE A SUFFICIENT FUEL PRESSURE. CONSTRUCTION PLANS STATED THAT THE FUEL SYSTEM IS 'DESIGNED TO REQUIRE TWO FUEL PUMPS', AND THAT THESE TWO FUEL PUMPS ARE A 'MANDATORY REQUIREMENT FOR SAFE OPERATION, AND THAT THERE IS NO ACCEPTABLE WAY AROUND THIS REQUIREMENT.' THE REQUIREMENT WAS REITERATED IN THE JULY, 1980, ISSUE OF THE CANARD PUSHER NEWSLETTER. THIS WAS THE FIRST FLIGHT FOLLOWING THE REMOVAL OF BOTH FUEL PUMPS BY THE PILOT/OWNER.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: fuel starvation due to a modification of the fuel system that rendered it incapable of maintaining adequate fuel pressure. The builder/pilot's lack of understanding of the fuel system was a factor in this accident.

Findings

Occurrence #1: LOSS OF ENGINE POWER(TOTAL) - MECH FAILURE/MALF

Phase of Operation: MANEUVERING

Findings

1. (C) FUEL SYSTEM,PUMP - NOT INSTALLED
2. (C) FUEL SYSTEM,ELECTRIC BOOST PUMP - NOT INSTALLED
3. (C) MAINTENANCE,MAJOR ALTERATION - IMPROPER - OWNER/PILOT MECHANIC
4. (C) PROCEDURES/DIRECTIVES - NOT FOLLOWED - OWNER/PILOT MECHANIC
5. (C) FLUID,FUEL - STARVATION

Occurrence #2: IN FLIGHT COLLISION WITH OBJECT

Phase of Operation: MANEUVERING - TURN TO LANDING AREA (EMERGENCY)

Findings

6. OBJECT - WIRE,TRANSMISSION
7. OBJECT - RESIDENCE

Factual Information

On May 7, 1995, at 1251 hours Pacific daylight time, a home built experimental Davenport Long-EZ, N41BF, was destroyed while attempting a forced landing at Los Angeles, California. The aircraft was owned and operated by the pilot and was on a local solo flight. Visual meteorological conditions prevailed and no flight plan was filed for the operation. The certificated private pilot sustained serious injuries. The flight originated from the Santa Monica Municipal Airport, Santa Monica, California, at 1247 on the day of the accident.

After clearing the aircraft for takeoff, the tower operator reported that the pilot requested a flyby. He approved the request, and as the aircraft completed the traffic pattern, he observed it flying over runway 21 at an estimated 20 to 30 feet agl. A few seconds later, he reported receiving a radio transmission from the pilot declaring an engine failure. After the reported engine failure, the aircraft was observed making a left turn approximately 1/8-mile southwest of the airport. While in the turn, the aircraft struck overhead electrical transmission wires, severing the right wing. The aircraft then rolled right and crashed into the attached garage of a single-family residence.

The aircraft came to rest in an inverted attitude, becoming wedged in the wooden garage structure. The pilot, who was unable to exit the aircraft, was extricated by emergency personnel.

A postaccident inspection of the aircraft revealed that the electric fuel boost pump and the mechanical, engine-driven fuel pump had both been removed. According to the representatives of the designer, a gravity fed fuel system had been flight-tested and was found to be unacceptable, since the location of the fuel tanks did not provide a sufficient "head" of fuel above the carburetor bowl to maintain the necessary fuel pressure.

The designer's construction plans state that the fuel system is "designed to require two fuel pumps", and that these two fuel pumps are a "mandatory requirement for safe operation, and that there is no acceptable way around this requirement." The requirement was reiterated in the July, 1980, issue of the Canard Pusher newsletter. This had reportedly been the first flight following the removal of both fuel pumps.

Further examination of the fuel system revealed evidence that the fuel line between the gascolator and the carburetor had been stretched and kinked in the installation process. When inspected, the gascolator fuel screen exhibited the visible presence of contaminants. The carburetor fuel filter was clean and free of contamination. Fuel found trapped in the fuel lines had the color and odor consistent with auto fuel.

The fuel lines from both the right and left tank sumps had been plumbed together using a "T" fitting. The "T" fitting had then been connected directly to the fuel selector valve. Each fuel tank had been individually vented with the vents positioned on either side of the aft canopy frame, over the inboard wing/fuel strake. The vents were mounted in what the designer described as a "low pressure" area, and had also been positioned flush with the skin of the aircraft. The designer's construction plans state that the fuel vents should be positioned facing and protruding into the slipstream.

The engine crankshaft was rotated and continuity was established to the accessory gears. After removal of the No. 4 cylinder rocker box cover, valve action was also established. Thumb compression was obtained on all four cylinders. The engine contained oil, and the oil pressure

screen was clean and free of contamination.

The left magneto had been destroyed; however, the right magneto was removed and a spark was obtained from all four ignition leads. The No. 1 and 3 bottom spark plugs were removed and found to be wet with oil. The No. 4 spark plug was fouled with lead.

A scotch brite pad was found installed as an air induction filter.

The shoulder harness, which had been anchored to the front seat bulkhead, had separated. The designer's construction plans identify hard points; however, the builder had not utilized them in the shoulder harness installation. The designer's representative stated that the builder's method of installation would not provide adequate support for the accelerative loads imposed by the pilot's upper body during an impact.

Pilot Information

Certificate:	Private	Age:	62, Male
Airplane Rating(s):	Single-engine Land	Seat Occupied:	Front
Other Aircraft Rating(s):	None	Restraint Used:	Seatbelt, Shoulder harness
Instrument Rating(s):	None	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 3 Valid Medical--w/ waivers/lim.	Last FAA Medical Exam:	07/19/1993
Occupational Pilot:	Last Flight Review or Equivalent:		
Flight Time:	1130 hours (Total, all aircraft), 230 hours (Total, this make and model), 1057 hours (Pilot In Command, all aircraft), 23 hours (Last 90 days, all aircraft), 7 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	DAVENPORT	Registration:	N41BF
Model/Series:	LONG-EZ LONG-EZ	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	Yes
Airworthiness Certificate:	Experimental	Serial Number:	92
Landing Gear Type:	Retractable - Tricycle	Seats:	2
Date/Type of Last Inspection:	Annual	Certified Max Gross Wt.:	1425 lbs
Time Since Last Inspection:		Engines:	1 Reciprocating
Airframe Total Time:	221 Hours	Engine Manufacturer:	LYCOMING
ELT:	Installed	Engine Model/Series:	O-235-C2C
Registered Owner:	WILLIAM ALBERT DAVENPORT	Rated Power:	108 hp
Operator:	WILLIAM ALBERT DAVENPORT	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:	SMO, 175 ft msl	Distance from Accident Site:	0 Nautical Miles
Observation Time:	1146 PDT	Direction from Accident Site:	225°
Lowest Cloud Condition:	Unknown / 0 ft agl	Visibility	15 Miles
Lowest Ceiling:	Broken / 3500 ft agl	Visibility (RVR):	0 ft
Wind Speed/Gusts:	10 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	220°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29 inches Hg	Temperature/Dew Point:	18° C / 8° C
Precipitation and Obscuration:			
Departure Point:	SANTA MONICA, CA (SMO)	Type of Flight Plan Filed:	None
Destination:		Type of Clearance:	VFR
Departure Time:	1247 PDT	Type of Airspace:	Class D

Airport Information

Airport:	SANTA MONICA MUNICIPAL (SMO)	Runway Surface Type:	Asphalt
Airport Elevation:	175 ft	Runway Surface Condition:	Dry
Runway Used:	21	IFR Approach:	None
Runway Length/Width:	4987 ft / 150 ft	VFR Approach/Landing:	Forced Landing; Go Around; Traffic Pattern

Wreckage and Impact Information

Crew Injuries:	1 Serious	Aircraft Damage:	Destroyed
Passenger Injuries:	N/A	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 Serious	Latitude, Longitude:	

Administrative Information

Investigator In Charge (IIC):	ROBERT R CRISPIN	Report Date:	11/06/1995
Additional Participating Persons:	THOMAS CLAIRMONT; EL SEGUNDO, CA GERALD R JAMES; DALLAS, TX		
Publish Date:			
Investigation Docket:	NTSB accident and incident dockets serve as permanent archival information for the NTSB's investigations. Dockets released prior to June 1, 2009 are publicly available from the NTSB's Record Management Division at pubinquiry@ntsb.gov , or at 800-877-6799. Dockets released after this date are available at http://dms.nts.gov/pubdms/ .		

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